

WHAT IS CLAIMED IS:

1. A structure comprising a communication section for providing communication between an interior and an exterior, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the communication section, the structure being characterized in that:

said gas-liquid separating element has a joined portion formed at least on an outer periphery of said gas-liquid separating element and joined to said communication section, and a ventilation area that contributes to ventilation.

2. The structure as claimed in claim 1, characterized in that said gas-liquid separating element has further a non-joined portion between said joined portion and said ventilation area.

3. The structure as claimed in claim 2, characterized in that said non-joined portion is a non-heated portion.

4. The structure as claimed in claim 1 or 2, characterized in that said joined portion is a thermally bonded portion.

5. A structure characterized by comprising:
a communication section for providing
communication between an interior and an exterior;
a gas-liquid separating element for passing
5 through only a gas, said gas-liquid separating element
being disposed in said communication section; and
an adhesive layer for joining said gas-liquid
separating element and said communication section,
said adhesive layer being formed between said gas-
10 liquid separating element and said communication
section.
6. The structure as claimed in claim 5,
characterized in that an adhesive constituting said
15 adhesive layer is a thermosetting adhesive that is
hardened at a temperature at which said gas-liquid
separating element is not thermally adversely affected.
7. The structure as claimed in claim 5,
20 characterized in that an adhesive constituting said
adhesive layer is a hot-melt adhesive that is melted
at a temperature at which said gas-liquid separating
element is not thermally adversely affected.
- 25 8. A structure characterized by comprising:
a communication section for providing
communication between an interior and an exterior;

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in said communication section; and

a holding member for holding at least an outer
5 periphery of said gas-liquid separating element between said holding member and said communication section, said holding member being attached to said communication section.

10 9. The structure as claimed in any of claims 1, 5 and 8, characterized in that said gas-liquid separating element comprises PTFE.

10. The structure as claimed in claim 9,
15 characterized in that said gas-liquid separating element undergoes liquid repellency treatment.

11. A method for manufacturing a structure comprising a communication section for providing communication
20 between an interior and an exterior, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the communication section,

the method being characterized by comprising the
25 step of heating said gas-liquid separating element from a surface thereof which is opposite a surface thereof which faces said exterior to thermally bond at

least an outer periphery of said gas-liquid separating element on said communication section.

12. A method for manufacturing a structure comprising
5 a communication section for providing communication between an interior and an exterior, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the communication section, the method being characterized
10 by comprising the steps of:

thermally bonding at least an outer periphery of said gas-liquid separating element on said communication section using an annular thermal fusion head; and

15 during the thermal fusion step, sucking air from an interior of said thermal fusion head.

13. A method for manufacturing a structure comprising
20 a communication section for providing communication between an interior and an exterior, and a gas-liquid separating element for passing through only a gas, the gas-liquid being disposed in the communication section, the method being characterized by comprising the steps of:

25 thermally bonding at least an outer periphery of said gas-liquid separating element on said communication section using an annular thermal fusion

head; and

during the thermal fusion step, covering a ventilation area of said gas-liquid separating element and a periphery thereof with a heat insulating member.

5

14. A method for manufacturing a structure comprising a communication section for providing communication between an interior and an exterior, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the communication section, the method being characterized by comprising the steps of:

pressing an annular thermal fusion head against said communication section via said gas-liquid separating element; and

after pressing said thermal fusion head at least against an outer periphery of said gas-liquid separating element, heating only a tip portion of said thermal fusion head to thermally bond at least the outer periphery of said gas-liquid separating element on said communication section.

15. The method as claimed in claim 14, characterized in that said thermal fusion head incorporates a heater only in the tip thereof which comes into contact with said gas-liquid separating element.

16. A method for manufacturing a structure comprising a communication section for providing communication between an interior and an exterior, and a gas-liquid separating element for passing through only a gas, the
5 gas-liquid separating element being disposed in the communication section,

the method being characterized by comprising the step of thermally bonding at least an outer periphery of said gas-liquid separating element on said
10 communication section using a laser.

17. A method for manufacturing a structure comprising a communication section for providing communication between an interior and an exterior, and a gas-liquid
15 separating element for passing through only a gas, the gas-liquid separating element disposed in the communication section,

the method being characterized by comprising the step of fusing at least an outer periphery of said
20 gas-liquid separating element by ultrasonic bonding while holding at least part of a ventilation area of said gas-liquid separating element using vibration isolating means.

25 18. The method as claimed in any one of claims 11 to 14, 16 and 17 characterized in that said gas-liquid separating element comprises PTFE.

19. The method as claimed in claim 18, characterized in that said gas-liquid separating element undergoes liquid repellency treatment.

5

20. A structure characterized by being constructed using the manufacture method as claimed in any one of claims 11 to 19.

10 21. A liquid tank comprising a negative-pressure introducing section for introducing negative pressure into the liquid tank, a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure
15 introducing section, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the negative-pressure introducing section, the liquid tank being characterized in that:

20 said gas-liquid separating element has a joined portion formed at least on an outer periphery of said gas-liquid separating element and joined to said negative-pressure introducing section, and a ventilation area that contributes to ventilation.

25

22. A liquid tank comprising a container body for storing a liquid, an opening through which the liquid

is taken out, an atmosphere communication port for providing communication between the container body and the air, and gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the atmosphere communication port, the liquid tank being characterized in that:

said gas-liquid separating element has a joined portion formed at least on an outer periphery of said gas-liquid separating element and joined to said atmosphere communication port, and a ventilation area that contributes to ventilation.

23. The liquid tank as claimed in claims 21 or 22, characterized in that said gas-liquid separating element has further a non-joined portion between said joined portion and said ventilation area.

24. The liquid tank as claimed in claim 23, characterized in that said non-joined portion is a non-heated portion.

25. The liquid tank as claimed in claim 23, characterized in that said joined portion is a thermally bonded portion.

26. A liquid tank characterized by comprising:
a negative-pressure introducing section for

introducing negative pressure into the liquid tank;

a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by said negative-pressure introducing section;

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in said negative-pressure introducing section; and

an adhesive layer for joining said gas-liquid separating element and said negative-pressure introducing section, said adhesive layer being formed between said gas-liquid separating element and said negative-pressure introducing section.

27. A liquid tank characterized by comprising:

a container body for storing a liquid;

an opening through which the liquid is taken out;

an atmosphere communication port for providing

communication between said container body and the air;

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in said atmosphere communication port; and

an adhesive layer for joining said gas-liquid separating element and said atmosphere communication port, said adhesive layer being formed between said

gas-liquid separating element and said atmosphere communication port.

28. The liquid tank as claimed in claims 26 or 27,
5 characterized in that an adhesive constituting said adhesive layer is a thermosetting adhesive that is hardened at a temperature at which said gas-liquid separating element is not thermally adversely affected.

10 29. The liquid tank as claimed in claims 26 or 27, characterized in that an adhesive constituting said adhesive layer is a hot-melt adhesive that is melted at a temperature at which said gas-liquid separating element is not thermally adversely affected.

15 30. A liquid tank characterized by comprising:
a negative-pressure introducing section for introducing negative pressure into the liquid tank;
a liquid intake section for taking a liquid in
20 the liquid tank on the basis of the negative pressure introduced by said negative-pressure introducing section;
a gas-liquid separating element for passing through only a gas, said gas-liquid separating element
25 being disposed in said negative-pressure introducing section; and
a holding member for holding at least an outer

periphery of said gas-liquid separating element
between said holding member and said negative-pressure
introducing section, said holding member being
attached to said negative-pressure introducing section.

5

31. A liquid tank characterized by comprising:

a container body for storing a liquid;

an opening through which the liquid is taken out;

an atmosphere communication port for providing

10 communication between said container body and the air;

a gas-liquid separating element for passing

through only a gas, said gas-liquid separating element
being disposed in said atmosphere communication port;

and

15

a holding member for holding at least an outer

periphery of said gas-liquid separating element

between said holding member and said atmosphere

communication port, said holding member being attached
to said atmosphere communication port.

20

32. The liquid tank as claimed in any one of claims

21, 22, 26, 27, 30, and 31, characterized in that said
gas-liquid separating element comprises PTFE.

25

33. The liquid tank as claimed in claim 32, .
characterized in that said gas-liquid separating
element undergoes liquid repellency treatment.

34. The liquid tank as claimed in any one of claims
21, 22, 26, 27, 30, and 31, characterized by storing
ink or a treatment liquid that orients a print
5 property of the ink on a print medium.

35. A method for manufacturing a liquid tank
comprising a negative-pressure introducing section for
introducing negative pressure into the liquid tank, a
10 liquid intake section for taking a liquid in the
liquid tank on the basis of the negative pressure
introduced by the negative-pressure introducing
section, and a gas-liquid separating element for
passing through only a gas, the gas-liquid separating
15 element being disposed in the negative-pressure
introducing section,

the method being characterized by comprising the
step of heating said gas-liquid separating element
from a surface thereof which is opposite a surface
20 thereof which faces said exterior to thermally bond at
least an outer periphery of said gas-liquid separating
element on said negative-pressure introducing section.

36. A method for manufacturing a liquid tank
25 comprising a container body for storing a liquid, an
opening through which the liquid is taken out, an
atmosphere communication port for providing

communication between the container body and the air,
and gas-liquid separating element for passing through
only a gas, the gas-liquid separating element being
disposed in the atmosphere communication port,

5 the method being characterized by comprising the
step of heating said gas-liquid separating element
from a surface thereof which is opposite a surface
thereof which faces said exterior to thermally bond at
least an outer periphery of said gas-liquid separating
10 element on said atmosphere communication port.

37. A method for manufacturing a liquid tank
comprising a negative-pressure introducing section for
introducing negative pressure into the liquid tank, a
15 liquid intake section for taking a liquid in the
liquid tank on the basis of the negative pressure
introduced by the negative-pressure introducing
section, and a gas-liquid separating element for
passing through only a gas, the gas-liquid separating
20 element being disposed in the negative-pressure
introducing section, the method being characterized by
comprising the steps of:

thermally bonding at least an outer periphery of
said gas-liquid separating element on said negative-
25 pressure introducing section using an annular thermal
fusion head; and

during the thermal fusion step, sucking air from

an interior of said thermal fusion head.

38. A method for manufacturing a liquid tank comprising a container body for storing a liquid, an opening through which the liquid is taken out, an atmosphere communication port for providing communication between the container body and the air, and gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the atmosphere communication port, the method being characterized by comprising the steps of:

thermally bonding at least an outer periphery of said gas-liquid separating element on said atmosphere communication port using an annular thermal fusion head; and

during the thermal fusion step, sucking air from an interior of said thermal fusion head.

39. A method for manufacturing a liquid tank comprising a negative-pressure introducing section for introducing negative pressure into the liquid tank, a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure introducing section, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the negative-pressure

introducing section, the method being characterized by comprising the steps of:

thermally bonding at least an outer periphery of said gas-liquid separating element on said negative-
5 pressure introducing section using an annular thermal fusion head; and

during the thermal fusion step, covering a ventilation area of said gas-liquid separating element and a periphery thereof with a heat insulating member.

10

40. A method for manufacturing a liquid tank comprising a container body for storing a liquid, an opening through which the liquid is taken out, an atmosphere communication port for providing
15 communication between the container body and the air, and gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the atmosphere communication port, the method being characterized by comprising the steps of:

20 thermally bonding at least an outer periphery of said gas-liquid separating element on said atmosphere communication port using an annular thermal fusion head; and

during the thermal fusion step, covering a
25 ventilation area of said gas-liquid separating element and a periphery thereof with a heat insulating member.

41. A method for manufacturing a liquid tank comprising a negative-pressure introducing section for introducing negative pressure into the liquid tank, a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure introducing section, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the negative-pressure introducing section, the method being characterized by comprising the steps of:

pressing an annular thermal fusion head against said negative-pressure introducing section via said gas-liquid separating element; and

after pressing said thermal fusion head at least against an outer periphery of said gas-liquid separating element, heating only a tip portion of said thermal fusion head to thermally bond at least the outer periphery of said gas-liquid separating element on said negative-pressure introducing section.

42. A method for manufacturing a liquid tank comprising a container body for storing a liquid, an opening through which the liquid is taken out, an atmosphere communication port for providing communication between the container body and the air, and gas-liquid separating element for passing through

only a gas, the gas-liquid separating element being disposed in the atmosphere communication port, the method being characterized by comprising the steps of:

pressing an annular thermal fusion head against
5 said atmosphere communication port via said gas-liquid separating element; and

after pressing said thermal fusion head at least against an outer periphery of said gas-liquid separating element, heating only a tip portion of said
10 thermal fusion head to thermally bond at least the outer periphery of said gas-liquid separating element on said atmosphere communication port.

43. The method as claimed in claims 41 or 42,
15 characterized in that said thermal fusion head incorporates a heater only in the tip thereof which comes into contact with said gas-liquid separating element.

20 44. A method for manufacturing a liquid tank comprising a negative-pressure introducing section for introducing negative pressure into the liquid tank, a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure
25 introduced by the negative-pressure introducing section, and a gas-liquid separating element for passing through only a gas, the gas-liquid separating

element being disposed in the negative-pressure
introducing section,

the method being characterized by comprising the
step of thermally bonding at least an outer periphery
5 of said gas-liquid separating element on said
negative-pressure introducing section using a laser.

45. A method for manufacturing a liquid tank
comprising a container body for storing a liquid, an
10 opening through which the liquid is taken out, an
atmosphere communication port for providing
communication between the container body and the air,
and gas-liquid separating element for passing through
only a gas, the gas-liquid separating element being
15 disposed in the atmosphere communication port,

the method being characterized by comprising the
step of thermally bonding at least an outer periphery
of said gas-liquid separating element on said
atmosphere communication port using a laser.

20

46. A method for manufacturing a liquid tank
comprising a negative-pressure introducing section for
introducing negative pressure into the liquid tank, a
liquid intake section for taking a liquid in the
25 liquid tank on the basis of the negative pressure
introduced by the negative-pressure introducing
section, and a gas-liquid separating element for

passing through only a gas, the gas-liquid separating element being disposed in the negative-pressure introducing section,

the method being characterized by comprising the step of fusing at least an outer periphery of said gas-liquid separating element by ultrasonic bonding while holding at least part of a ventilation area of said gas-liquid separating element using vibration isolating means.

47. A method for manufacturing a liquid tank comprising a container body for storing a liquid, an opening through which the liquid is taken out, an atmosphere communication port for providing communication between the container body and the air, and gas-liquid separating element for passing through only a gas, the gas-liquid separating element being disposed in the atmosphere communication port,

the method being characterized by comprising the step of fusing at least an outer periphery of said gas-liquid separating element by ultrasonic bonding while holding at least part of a ventilation area of said gas-liquid separating element using vibration isolating means.

48. The method as claimed in any one of claims 35 to 42, 44 to 47, characterized in that said gas-liquid

separating element comprises PTFE.

49. The method as claimed in claim 48, characterized
in that said gas-liquid separating element undergoes
5 liquid repellency treatment.

50. A liquid tank characterized by being constructed
using the manufacture method as claimed in any one of
claims 35 to 49.

51. An ink jet apparatus characterized by comprising
a negative-pressure generating mechanism that exerts
negative pressure on a liquid tank as claimed in any
one of claims 21 to 34 and claim 50 to introduce a
15 liquid into the liquid tank.

52. An ink jet apparatus comprising:

a negative-pressure generating mechanism for
introducing a liquid into a liquid by exerting
20 negative pressure on the liquid tank, the liquid tank
having a negative-pressure introducing section for
introducing negative pressure into the liquid tank and
a liquid intake section for taking a liquid in the
liquid tank on the basis of the negative pressure
25 introduced by the negative-pressure introducing
section; and

a gas-liquid separating element for passing

through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion which connects said negative-pressure generating mechanism and the negative-pressure introducing section;

the ink jet apparatus characterized by comprising said gas-liquid separating element has a joined portion formed at least on an outer periphery of said gas-liquid separating element and joined to the vicinity of the connecting portion, and a ventilation area that contributes to ventilation.

53. The ink jet apparatus as claimed in claim 52, characterized in that said gas-liquid separating element has further a non-joined portion between said joined portion and said ventilation area.

54. The ink jet apparatus as claimed in claim 53, characterized in that said non-joined portion is a non-heated portion.

55. The ink jet apparatus as claimed in claims 53, characterized in that said joined portion is a thermally bonded portion.

56. An ink jet apparatus comprising:
a negative-pressure generating mechanism for

introducing a liquid into a liquid by exerting negative pressure on the liquid tank, the liquid tank having a negative-pressure introducing section for introducing negative pressure into the liquid tank and
5 a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure introducing section;

10 a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion which connects said negative-pressure generating mechanism and the negative-pressure introducing section; and

15 an adhesive layer for joining said gas-liquid separating element and the vicinity of the connecting portion, said adhesive layer being formed between said gas-liquid separating element and the vicinity of the connecting portion.

20
57. The ink jet apparatus as claimed in claim 56, characterized in that an adhesive constituting said adhesive layer is a thermosetting adhesive that is hardened at a temperature at which said gas-liquid
25 separating element is not thermally adversely affected.

58. The ink jet apparatus as claimed in claim 56,

characterized in that an adhesive constituting said adhesive layer is a hot-melt adhesive that is melted at a temperature at which said gas-liquid separating element is not thermally adversely affected.

5

59. An ink jet apparatus comprising:

10 a negative-pressure generating mechanism for introducing a liquid into a liquid by exerting negative pressure on the liquid tank, the liquid tank having a negative-pressure introducing section for introducing negative pressure into the liquid tank and a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure introducing
15 section;

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion which connects said negative-pressure generating
20 mechanism and the negative-pressure introducing section; and

a holding member for holding at least an outer periphery of said gas-liquid separating element between said holding member and the vicinity of the
25 connecting portion, said holding member being attached to the vicinity of the connecting portion.

Sub. 93
60. The ink jet apparatus as claimed in any one of claims 51, 52, 56 and 59, characterized in that said gas-liquid separating element comprises PTFE.

5 61. The ink jet apparatus as claimed in claim 60, characterized in that said gas-liquid separating element undergoes liquid repellency treatment.

Sub. 94
10 62. The ink jet apparatus as claimed in any one of claims 51, 52, 56 and 59, characterized in that said liquid tank is stored ink or a treatment liquid that orients a print property of the ink on a print medium.

15 63. A method for manufacturing an ink jet apparatus comprising:

FOOTNOTES
20 a negative-pressure generating mechanism for introducing a liquid into a liquid by exerting negative pressure on the liquid tank, the liquid tank having a negative-pressure introducing section for introducing negative pressure into the liquid tank and a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure introducing section; and

25 a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion

which connects said negative-pressure generating mechanism and the negative-pressure introducing section;

the method being characterized by comprising the
5 step of heating said gas-liquid separating element from a surface thereof which is opposite a surface thereof which faces said exterior to thermally bond at least an outer periphery of said gas-liquid separating element on the vicinity of the connection portion.

10

64. A method for manufacturing an ink jet apparatus comprising:

a negative-pressure generating mechanism for introducing a liquid into a liquid by exerting
15 negative pressure on the liquid tank, the liquid tank having a negative-pressure introducing section for introducing negative pressure into the liquid tank and a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure
20 introduced by the negative-pressure introducing section; and

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion
25 which connects said negative-pressure generating mechanism and the negative-pressure introducing section;

the method being characterized by comprising the steps of:

thermally bonding at least an outer periphery of said gas-liquid separating element on the vicinity of the connecting portion using an annular thermal fusion head; and

during the thermal fusion step, sucking air from an interior of said thermal fusion head.

65. A method for manufacturing an ink jet apparatus comprising:

a negative-pressure generating mechanism for introducing a liquid into a liquid by exerting negative pressure on the liquid tank, the liquid tank having a negative-pressure introducing section for introducing negative pressure into the liquid tank and a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure introducing section; and

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion which connects said negative-pressure generating mechanism and the negative-pressure introducing section;

the method being characterized by comprising the

steps of:

thermally bonding at least an outer periphery of
said gas-liquid separating element on the vicinity of
the connecting portion using an annular thermal fusion
5 head; and

during the thermal fusion step, sucking air from
an interior of said thermal fusion head.

66. A method for manufacturing an ink jet apparatus
10 comprising:

a negative-pressure generating mechanism for
introducing a liquid into a liquid by exerting
negative pressure on the liquid tank, the liquid tank
having a negative-pressure introducing section for
15 introducing negative pressure into the liquid tank and
a liquid intake section for taking a liquid in the
liquid tank on the basis of the negative pressure
introduced by the negative-pressure introducing
section; and

20 a gas-liquid separating element for passing
through only a gas, said gas-liquid separating element
being disposed in a vicinity of a connecting portion
which connects said negative-pressure generating
mechanism and the negative-pressure introducing
25 section;

the method being characterized by comprising the
steps of:

pressing an annular thermal fusion head against the vicinity of the connecting portion via said gas-liquid separating element; and

5 after pressing said thermal fusion head at least against an outer periphery of said gas-liquid separating element, heating only a tip portion of said thermal fusion head to thermally bond at least the outer periphery of said gas-liquid separating element on said the connecting portion.

10

67. A method for manufacturing an ink jet apparatus comprising:

15 a negative-pressure generating mechanism for introducing a liquid into a liquid by exerting negative pressure on the liquid tank, the liquid tank having a negative-pressure introducing section for introducing negative pressure into the liquid tank and a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure
20 introduced by the negative-pressure introducing section; and

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion
25 which connects said negative-pressure generating mechanism and the negative-pressure introducing section;

the method being characterized by comprising the step of thermally bonding at least an outer periphery of said gas-liquid separating element on the vicinity of the connecting portion using a laser.

5

68. A method for manufacturing an ink jet apparatus comprising:

a negative-pressure generating mechanism for introducing a liquid into a liquid by exerting negative pressure on the liquid tank, the liquid tank having a negative-pressure introducing section for introducing negative pressure into the liquid tank and a liquid intake section for taking a liquid in the liquid tank on the basis of the negative pressure introduced by the negative-pressure introducing section; and

a gas-liquid separating element for passing through only a gas, said gas-liquid separating element being disposed in a vicinity of a connecting portion which connects said negative-pressure generating mechanism and the negative-pressure introducing section;

the method being characterized by comprising the step of fusing at least an outer periphery of said gas-liquid separating element by ultrasonic bonding while holding at least part of a ventilation area of said gas-liquid separating element using vibration

isolating means.

69. The method as claimed in any one of claims 63 to
68, characterized in that said gas-liquid separating
5 element comprises PTFE.

70. The method as claimed in claim 69, characterized
in that said gas-liquid separating element undergoes
liquid repellency treatment.

10 71. An ink jet apparatus characterized by being
constructed using the manufacture method as claimed in
any one of claims 63 to 70.

15 72. A head cartridge characterized by comprising:
a liquid tank as claimed in any one of claims 21
to 34 and claim 50; and
a liquid ejecting head having an ejection opening
that eject a liquid supplied by said liquid tank.

20 73. A head cartridge characterized by comprising a
liquid ejecting head having an ejection opening that
eject a liquid supplied by a liquid tank as claimed in
any one of claims 51 to 62 and claim 71.

25 74. The head cartridge as claimed in claim 72,
characterized in that said liquid ejecting head

further comprises an electrothermal transducer that generates thermal energy as ejection energy used to eject a liquid through the ejection opening.

5 75. A image forming apparatus characterized by comprising:

a carrying portion which a liquid tank as claimed in any one of claims 21 to 34 and claim 50 and liquid ejecting head having an ejection opening for ejecting a liquid supplied from the liquid tank are attachable; and

means for moving the liquid ejecting head respect to the print medium.

15 76. A image forming apparatus characterized by comprising:

a carrying portion which a liquid tank of an ink jet apparatus as claimed in any one of claims 51 to 62 and claim 71 and liquid ejecting head having an ejection opening for ejecting a liquid supplied from the liquid tank are attachable; and

means for relatively moving the liquid ejecting head to the print medium.

25 77. A image forming apparatus characterized by comprising:

a carrying portion which a head cartridge as

Sub.
A6
conclusion

claimed in claim 72 is attachable; and

means for relatively moving the head cartridge to
the print medium.

1002944-122804